

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1-20 (cancelled)

21. (new) A process for growing a single crystal silicon ingot in which the ingot comprises a central axis, a seed-cone, an end-cone and a constant diameter portion between the seed-cone and the end-cone having a circumferential edge and a radius extending from the central axis to the circumferential edge and a nominal diameter of about 200 mm, the ingot being grown and cooled from the solidification temperature in accordance with the Czochralski method, the process comprising:

bringing a seed crystal into contact with a silicon melt;

pulling the seed crystal from the melt at a pulling rate, such that silicon solidifies on the seed crystal thereby forming a single crystal silicon ingot, wherein the pulling rate after at least about 200 mm of the axial length of the ingot has formed is from about 0.2 mm/min to about 0.8 mm/min; and,

controlling (i) a growth velocity,  $v$ , (ii) an average axial temperature gradient,  $G_0$ , during the growth of the constant diameter portion of the crystal over the temperature range from solidification to a temperature of no less than about 1325 °C, and (iii) the cooling rate of the crystal from the solidification temperature to about 1,050 °C to cause the formation of an axially symmetrical segment which is substantially free of agglomerated intrinsic point defects wherein the axially symmetric region has a radial width which is at least about 30% of the length of the radius of the constant diameter portion of the ingot, and has a length as measured along the central axis of at least about 20% of the length of the constant diameter portion of the ingot.

22. (new) The process of claim 21 wherein the pulling rate after at least about 200 mm of the axial length of the ingot has formed is from about 0.25 mm/min to about 0.6 mm/min.

23. (new) The process of claim 21 wherein the pulling rate after at least about 200 mm of the axial length of the ingot has formed is from about 0.3 mm/min to about 0.5 mm/min.

24. (new) The process of claim 21 wherein the control of  $G_0$  comprises controlling heat transfer at the melt/solid interface.

25. (new) The process of claim 24 wherein heat transfer at the melt/solid interface is controlled by changing the distance between the melt surface and a device positioned above the melt surface.

26. (new) The process of claim 25 wherein the device is selected from the group consisting of a reflector, a radiation shield, a heat shield, an insulating ring, a purge tube or a light pipe.

27. (new) The process of claim 25 wherein heat transfer is controlled by changing the position of the melt surface relative to the position of the device.

28. (new) The process of claim 25 wherein heat transfer is controlled by changing the position of the device relative to the position of the melt surface.

29. (new) The process of claim 24 wherein heat transfer at the melt/solid interface is controlled by adjusting power supplied to a heater near the silicon melt.

30. (new) The process of claim 21 wherein the crystal has a nominal diameter of about 200 mm and is cooled from the solidification temperature to a temperature of at least about 1,050 °C over a period of at least about 10 hours.

31. (new) The process of claim 21 wherein the crystal has a nominal diameter of about 200 mm and is cooled from the solidification temperature to a temperature of at least about 1,050 °C over a period of at least about 20 hours.

32. (new) The process of claim 21 wherein the length of the axially symmetric region is at least about 40% of the length of the constant diameter portion of the ingot.

33. (new) The process of claim 21 wherein the length of the axially symmetric region is at least about 60% of the length of the constant diameter portion of the ingot.

34. (new) The process of claim 21 wherein the width of the axially symmetric region is at least about 60% of the length of the radius of the constant diameter portion of the ingot.

35. (new) The process of claim 21 wherein the growth velocity,  $v$ , and the instantaneous axial temperature gradient,  $G_0$ , are controlled such that the ratio,  $v/G_0$ , ranges in value from about 0.6 to about 1.5 times the critical value of  $v/G_0$ .

36. (new) The process of claim 21 wherein the growth velocity,  $v$ , and the instantaneous axial temperature gradient,  $G_0$ , are controlled such that the ratio  $v/G_0$  ranges in value from about 0.75 to about 1 times the critical value of  $v/G_0$ .

37. (new) The process of claim 21, wherein the cooling rate is controlled to achieve radial diffusion of self-interstitial intrinsic point defects over a distance of at least about 5 cm.

38. (new) The process of claim 21 wherein the cooling rate is controlled to achieve radial diffusion of self-interstitial intrinsic point defects over a distance of at least about 10 cm.

39. (new) The process of claim 21 further comprising rapidly cooling the ingot through a range of temperatures in which oxygen precipitate nucleation centers typically form such that oxygen precipitate nucleation centers do not form in the during the cooling of the ingot.

40. (new) The process of claim 39 wherein the range of temperatures in which oxygen precipitate nucleation centers form is from about 350 °C to about 750 °C.